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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/565,587	02/22/2007	Tetsuro Sato	3209-111	2274

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GREENBLUM & BERNSTEIN, P.L.C.  
1950 Roland Clarke Place  
Reston, VA 20191

EXAMINER
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JACKSON, MONIQUE R

ART UNIT	PAPER NUMBER
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1787

MAIL DATE	DELIVERY MODE
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08/31/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/565,587	<b>Applicant(s)</b> SATO ET AL.	
	<b>Examiner</b> Monique R. Jackson	<b>Art Unit</b> 1787	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-11 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-11 and 13-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. The amendment filed 6/23/10 has been entered. Claims 4 and 12 have been canceled. New claim 16 has been added (Note: Claim 16 improperly included markings as if the claim was amended, however the status identifier was properly listed as “New” and the amendment was not returned as non-compliant given that the record was clear that Claim 16 was in fact a “New” claim and not a “Currently Amended” claim.) Claims 1-3, 5-11 and 13-16 are pending in the application. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Claim Rejections - 35 USC § 112***

2. Claims 6, 14 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 recites the limitation “according to claim 1, wherein said ultra thin primer resin layer is formed using a resin mixture **consisting of** 5 to 50 parts by weight of an epoxy resin that may contain a curing agent, 50 to 95 parts by weight of a polyether sulfone resin, and an appropriate quantity added as required of a curing accelerator” (emphasis added) in lines 2-6. However, amended claim 1 recites that “said ultra thin primer resin layer is formed using a resin mixture **consisting of** 20 to 80 parts by weight of an epoxy resin that may contain a curing agent, 20 to 80 parts by weight of a solvent-soluble aromatic polyamide resin polymer, and an effective amount of a curing accelerator” in lines 7-10. Hence it is unclear how the resin mixture of Claim 6 can consist of 5-50 wt parts epoxy and 50-95 wt parts of polyether sulfone, when Claim 6 depends upon Claim 1 which has already required the resin mixture to consist of 20-80 wt parts epoxy and 20-80 wt parts of aromatic polyimide. Therefore, the

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mixture recited in Claim 6 appears to contradict the required mixture of Claim 1 and renders the claims indefinite.

3. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 5 recites the limitation "said aromatic polyamide polymer using for said ultra thin primer resin layer is obtained by allowing an aromatic polyamide to react with a resin" however it is unclear how this limitation further modifies Claim 1 given that an aromatic polyamide is an aromatic polyamide polymer and a resin.

4. Claims 7 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 7 recites the limitation "wherein a resin flow when measured in accordance with MIL-P-13949G in the MIL Standard is 5% or less" however it is unclear what "a resin", any resin? The epoxy resin? The aromatic polyamide resin? The resin mixture?

5. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 8 recites the limitation "preparing a resin solution by mixing an epoxy resin **that may contain** a curing agent, an aromatic polyamide polymer soluble in a solvent, **or a polyether sulfone resin, and** an appropriate quantity added as required of a curing accelerator to form a resin mixture" (emphasis added), in lines 3-10, however given the "may contain" and the "or" in the limitation, it is unclear which components are required, which are optional, and which are part of the alternative "or" expression. As recited, it appears that the a) curing agent, b) polyamide polymer and c) polyether sulfone **may be** contained in the epoxy resin and hence are

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all optional; or the mixture may be formed by mixing any one of a) an epoxy resin with an optional curing agent, b) a polyamide polymer, or c) a polyether sulfone with an appropriate quantity of curing accelerator. For examination purposes, the Examiner has interpreted the amended claim in the broadest possible manner wherein the primer resin layer may be formed from an epoxy resin or a soluble aromatic polyamide polymer or a polyether sulfone resin.

***Claim Rejections - 35 USC § 102***

6. Claim 8 is rejected under 35 U.S.C. 102(a) as being anticipated by JP 2003-229648 A for the reasons recited in the prior office action and restated below, wherein as discussed above the resin mixture of Claim 8 has been interpreted to comprise an epoxy resin and an appropriate amount of curing accelerator.

7. JP'648 teaches a copper foil/resin base material laminate for printed wiring boards wherein the copper foil has a 10-point average surface roughness Rz of 0.5-10 micrometers, preferably 0.5-3 micrometers, and may be used without any surface roughening treatment (Abstract; Paragraphs 0007, 0022.) JP'648 teaches that the copper foil may be treated with a silane coupling agent and then an adhesive layer having a thickness of 0.5-5g/m<sup>2</sup> can be coated on the treated foil as a solution and dried to a semi-cured state (*reads upon claimed thickness when converted to  $\mu\text{m}$* ; Paragraphs 0005-0006, 0011.) JP'648 teaches that suitable silane coupling agents include amino-silanes and mercapto-silanes (Paragraph 0008.) In terms of the adhesive layer, JP'648 teaches that an epoxy resin polymer composition comprising a hardening agent is preferred and can be dissolved in a solvent and then used as a coating varnish with a concentration of 1 to 10% (Paragraph 0009-0011.) JP'648 specifically teaches an example that reads upon the claimed invention (Example 3.)

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8. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

***Claim Rejections - 35 USC § 103***

9. Claims 1-3, 5, 9-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP'648 in view of Hosagane et al for the reasons recited in the prior office action and restated below.

10. The teachings of JP'648 are discussed above. JP'648 teaches that the adhesive layer is preferably an epoxy adhesive composition but does not specifically limit the epoxy adhesive composition, and further teaches that it can also comprise various hardening agents, curing systems, and additives including other resins but does not teach the claimed epoxy resin compositions including an aromatic polyamide resin, in the claimed contents with respect to the epoxy resin. However, it is well established in the art that such conventional resins can be further incorporated into an epoxy adhesive in the art to provide improved heat resistance and mechanical properties for a particular end use, as taught by Hosagane et al, and hence one having ordinary skill in the art at the time of the invention would have been motivated to incorporate such conventional resins in the epoxy adhesive taught by JP'648, utilizing routine experimentation to determine the optimum amount and solids content, based upon the desired end use and flow properties required for a particular application, given the predictable results and reasonable expectation of success.

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11. Claims 1-3, 5, 8-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poutasse *II* in view of Hosagane et al for the reasons recited in the prior office action and restated below.

12. Poutasse *II* teaches an epoxy adhesive to be applied to copper foils and copper clad laminates using the same for use in making printed circuit boards, wherein Poutasse *II* teaches that the copper foil has a surface roughness on the matte side of 2-18 microns, and 1.5-3 microns on the shiny side, without any roughening treatment, and can be provided with an aminosilane coupling agent layer or treatment prior to applying the epoxy adhesive layer (Entire document, particularly Col. 6-Col. 9, line 5.) Poutasse *II* teaches that the epoxy adhesive composition can be provided as an epoxy solution in an organic solvent and then dried to form a B-stage epoxy adhesive layer wherein Poutasse *II* teaches that the dry film weight of the B-stage epoxy adhesive is preferably about 20 to about 50 grams/m<sup>2</sup> (Col. 8.) Though Poutasse *II* teaches a preferred adhesive coating weight, Poutasse *II* does not specifically limit the thickness or teach the instantly claimed thickness of 1 to 5 microns. However, it is well established in the art that adhesion layer thickness is a result effective variable affecting the adhesion strength between the two surfaces to be adhered and hence one having ordinary skill in the art at the time of the invention would have been motivated to determine the optimum adhesive coating weight or layer thickness for a particular adhesive composition to provide the desired adhesion properties for a particular end use, while conserving material by reducing the thickness as appropriate. In terms of the adhesive composition, though Poutasse *II* teaches an epoxy resin adhesive that may further comprise other additive resins, Poutasse *II* does not specifically teach incorporating an aromatic polyamide as instantly claimed. However, it is well established in the art that such conventional

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resins can be further incorporated into an epoxy adhesive in the art to provide improved heat resistance and mechanical properties for a particular end use, as taught by Hosagane et al, and hence one having ordinary skill in the art at the time of the invention would have been motivated to incorporate such conventional resins in the epoxy adhesive taught by Poutasse *II*, utilizing routine experimentation to determine the optimum amount and solids content, based upon the desired end use and flow properties required for a particular application.

### ***Response to Arguments***

13. Applicant's arguments filed 6/23/10 have been fully considered but they are not persuasive and/or moot in view of the above new ground(s) of rejection. With regards to the secondary reference to Hosagane et al, the Examiner notes that the entire reference is directed to the incorporation of an aromatic polyamide into an epoxy resin with a maleimide curing agent as an adhesive for copper clad laminates and hence Applicant's arguments that the Examiner has not pointed to particular portions of Hosagane et al for support of her position of obviousness are not persuasive. Hence, the Examiner maintains her position that the instant invention would have been obvious over the teachings of JP'648 or Poutasse *II* in view of Hosagane et al. Applicant's arguments with respect to Claim 8 are moot given the Examiner's discussion above in paragraphs 5-6.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO



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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monique R. Jackson whose telephone number is 571-272-1508. The examiner can normally be reached on Mondays-Thursdays, 10:00AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on 571-272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Monique R Jackson/  
Primary Examiner, Art Unit 1787  
August 29, 2010